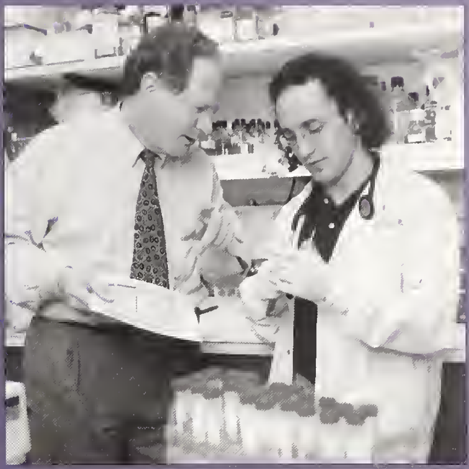
National Institutes
of Health



CLINICAL RESEARCH TRAINING PROGRAM

freedom to explore

**A public-private partnership
supported by a grant
to the Foundation for the NIH
from Pfizer Inc**

Dear Medical and Dental Students:

I am pleased to invite you to apply for the Clinical Research Training Program (CRTP) at the National Institutes of Health. The CRTP is designed to train our country's next generation of physicians and dentists to conduct the clinical research of tomorrow. The program is for students who have completed their initial clinical rotations, generally after the third year of medical or dental school. Participants work alongside top clinical investigators to study the causes and potential treatments of common and rare diseases. Students draw on the exceptional research resources at the NIH and learn how to make and build on the discoveries that can lead to better ways to prevent, diagnose, treat, and cure diseases.

The CRTP was born from the recommendations of a group of clinical research experts who advised the NIH Director to develop a program that would give creative, research-oriented students an opportunity to become involved in clinical research early in their careers. We took the advice and started the program in 1997. The Foundation for the NIH and Pfizer Pharmaceuticals became partners in the program in 1998, agreeing to support 15 CRTP students each year.

Participants in the CRTP spend a full academic year at the NIH. The program is modeled after the successful Howard Hughes Medical Institute-NIH Research Scholars Program that brings more than 40 medical and dental students into NIH research laboratories each year for training in basic research.

Each CRTP student is assigned to a tutor, who is an outstanding senior clinical investigator in the student's field of interest. Tutors work closely with the CRTP students and recommend senior clinicians to serve as mentors during the training experience.

The program is located on the main campus of the NIH in Bethesda, Maryland and gives students access to the lively intellectual community of NIH. Students in the program work in the Warren Grant Magnuson Clinical Center (*http://www.cc.nih.gov*), which is the world's largest hospital devoted exclusively to research. They participate in a variety of seminars and tutorials designed especially for them.

I hope you will consider applying for this unique clinical research training opportunity. I look forward to working personally with the next group of students selected for this important program.

Sincerely yours,

Michael M. Gottesman

Michael M. Gottesman, M.D.
Deputy Director for Intramural Research
National Institutes of Health

focused research

The Clinical Research Training Program (CRTP) is a small, year-long program designed to attract the most creative, research-oriented medical and dental students to the intramural campus of the National Institutes of Health in Bethesda, Maryland. Participants, known as fellows, spend a year engaged in a mentored clinical research project in an area that matches their personal interests and goals. An individualized program is then developed for fellows, who may attend ambulatory clinics, see patients on the wards, and work with a principal investigator in our laboratories on selected clinical research trials. Fellows learn about translational research, that first step from the bench to the bedside; they attend lectures on clinical research; and they participate in an interactive, small-group learning experience with the 15 members of the program and leading NIH physicians and scientists.

Fellows can remain at NIH for a second year, depending on support of the sponsoring NIH institute, availability of funds, and permission from the student's home institution.

The NIH Campus

The intramural campus of the National Institutes of Health is situated on 317 acres in Bethesda, Maryland on the outskirts of Washington, DC. Over 50 buildings are dedicated to the biomedical research enterprise. The NIH hospital, the Warren Grant Magnuson Clinical Center, is a 324-bed tertiary care hospital–the largest in the world devoted exclusively to the care of patients on active clinical research protocols. It will be succeeded by a new 250-bed hospital, scheduled for completion in 2002. There are over 1,000 active research protocols at any given time.

> **"CRTP has provided more than I could have expected or hoped for. Not only have I been exposed to every step of submitting a protocol, I see patients and I have excellent mentors."**
>
> *–Courtney Fitzhugh*
> *University of California, San Francisco*

clinically relevant

The Academic Program

The emphasis of the academic component of CRTP, in addition to the mentored clinical research experience in clinics and laboratories on campus, is on interactive, small-group learning. Fellows collaborate closely with one another and with leading clinical investigators at the NIH.

Selection of a Mentor

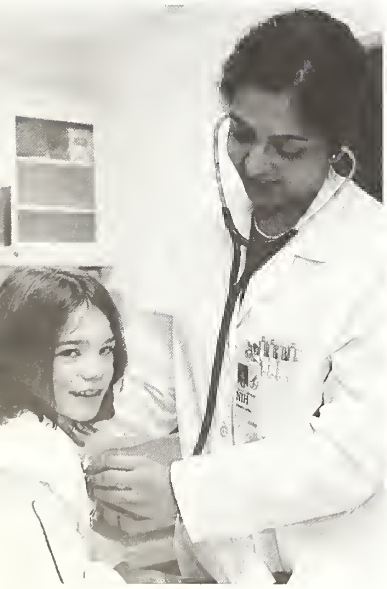
Consultation with the Director of the CRTP takes place in advance of a fellow's arrival on campus, to help refine research interests and narrow the range of topics that an individual may pursue over the course of the year-long program. The Director assigns each fellow a tutor, who is a senior physician-scientist on campus. The tutor works with the fellow, upon his or her arrival, to identify possible mentors and laboratories within the fellow's chosen area of interest. Fellows then meet with possible mentors, make a selection in consultation with the tutor, and plan an individualized research program combining clinical protocols and laboratory studies relevant to the protocols. Students and mentors meet regularly to chart progress, plot investigational strategies, and discuss careers in biomedical research.

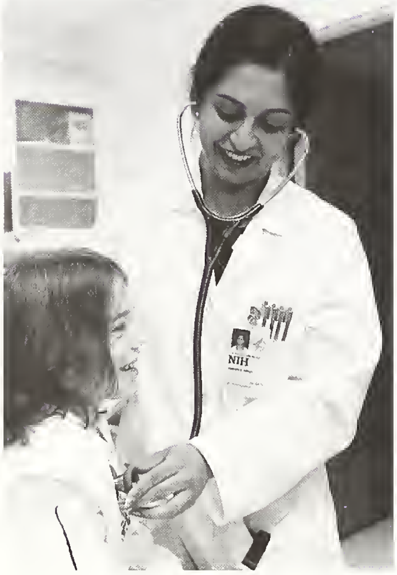
> **"With the wards often located on the same floor as the labs, I witnessed and participated in the cutting-edge cycle of bench-to-bedside, translational research throughout the year."**
>
> *–Harjot Kaur Singh*
> *Medical College of Virginia*

Wednesday Evenings

On Wednesday evenings, CRTP fellows meet with the director of the program, selected mentors and scientists for small-group sessions. The discussion includes topics covered in the IPPCR course, described below. Each fellow also leads one journal club over the course of the year, focusing on a ground-breaking discovery or seminal paper that has recently been published. These evening gatherings, over an informal meal, are the heart of the CRTP program: they create an opportunity for lively discussion and pursuit of a single topic in great depth. Fellows find that these sessions create a good balance with the more formal, didactic component of the program.

On Monday evenings, CRTP fellows join the scholars in the Howard Hughes Medical Institute for their dinner series. Talks given by NIH investigators are followed by informal discussions on the speaker's educational background, career path, and particular research interests.





Introduction to the Principles and Practice of Clinical Research (IPPCR)

The IPPCR is offered for one hour, two evenings a week, over a four- to five-month period. Established in 1995, the program introduces a multitude of ethical, legal, scientific, regulatory, and biostatistical issues in clinical research. CRTP fellows attend the lectures, which form the basis for some discussion at the Wednesday evening sessions. Objectives of IPPCR are:

- To become familiar with the basic epidemiologic methods involved in clinical research
- To be able to discuss the principles involved in the ethics of clinical research, the legal issues involved in clinical research, and the regulations involved in human subjects research, including the role of Internal Review Boards (IRBs) in clinical research
- To become familiar with the principles and issues involved in monitoring patient-oriented research, including regulatory requirements and quality assurance
- To be able to discuss the infrastructure required in performing clinical research and have an understanding of the steps involved in developing and funding research studies

Year-End Presentations

In May of each year, CRTP fellows give a formal presentation on their clinical research in a special two-day event for tutors, mentors, and interested members of the NIH community.

Additional Training

CRTP fellows can partake of the NIH's lively intellectual community, as well: The Wednesday Afternoon Lecture Series draws premier scientists and Nobel Prize winners to campus from around the world. Clinical Center Grand Rounds address a broad range of clinical research topics by intramural scientists each week. Fellows may also attend meetings and activities of NIH inter-institute interest groups, assemblies of scientists with common research interests. These groups are divided into broad, process-oriented parent groups and smaller, more focused groups centered on particular research models, subjects, or techniques.

Formal courses are offered on campus by the Foundation for Advanced Education in the Sciences, and a number of CRTP fellows attend these classes, most of which are offered in the evenings. The Clinical Center has additional training opportunities, as well: Principles of Clinical Pharmacology covers what researchers need to know about the clinical pharmacologic aspects of drug development and use. The Clinical Bioethics course is an overview of ethical and regulatory issues in clinical research, designed to provide attendees with the skills to analyze ethical issues confronted in clinical research, and to enable researchers to design protocols that conform to prevailing ethical standards.

> **"I consider the time I spent in the CRTP one of my best years so far in terms of education, career, and fun. I have honed my clinical skills and feel I am extremely well prepared for residency."**
>
> –*Howard Fine*
> *Harvard University*

intellectual rigor

Eligibility

Applicants to CRTP must be currently enrolled in medical or dental school and have completed, or be in the process of completing, one year of clinical rotations. This would normally be the third year of medical or dental school. Candidates in M.D./Ph.D. programs are also eligible to apply. Participants in CRTP must be U.S. citizens or permanent residents.

Application Process

Applications for CRTP are submitted on-line through the Office of Education web site, which is *www.training.nih.gov/crtp*. Applications are submitted starting in early fall for a mid-January deadline. Requirements include:

- A cover letter, including a description of research interests and goals (although prior research experience is not a requirement of CRTP, enthusiasm for and commitment to the objectives of clinical research is highly desirable)
- A curriculum vitae
- Three letters of recommendation, including one from the Office of the Dean authorizing a student's participation in CRTP
- Medical or dental school grades

The web site also gives profiles of the research projects of former CRTP participants and addresses a number of Frequently Asked Questions.

Selection Process

Following a review of all applications, the Board of Tutors for CRTP selects a number of students to be interviewed. Interviews are usually held over a Saturday-Monday period in March. Decisions are normally communicated to successful candidates the following month. The program begins on July 1 or August 1, depending on students' rotation schedules at their home schools. In 2000, the CRTP class size was 15.

Accommodations

CRTP is a residential program. Fellows live either on campus or in furnished apartments adjacent to campus in Bethesda. For several years, the NIH Director's house has accommodated six trainees in a shared living arrangement. Two-bedroom, two-bath apartments are also available to fellows, in buildings within walking distance of the center of campus.

"I have had the opportunity to work with and learn from some of the world's top clinicians and researchers on a daily basis. All of the research I do pertains directly to patient care. Plus, the opportunity to spend a year sharing ideas with similarly minded students is an experience I will never forget."

– *Christopher Graber*
University of Texas Southwestern

The DC Area

"Work is hard. Distractions are plentiful. And time is short."
–*Adam Hochschild*

"He who cannot rest, cannot work. . . ."
–*Harry Emerson Fosdick*

The national capitol area offers much in the way of entertainment and relaxation. You can spend free time visiting the museums of the Smithsonian Institute, attending performances at the Kennedy Center, exploring battlefields of the American Civil War, cycling or hiking along the C&O Canal's towpath, sailing the Chesapeake Bay, or sitting in on Senate hearings. Bethesda itself is home to some 300 restaurants. The location of the NIH on the Metro subway line also means that you can be downtown in 20 to 30 minutes.

Clinical Research Training Program *benefits*

Stipend (12 months, taxable)	$23,000
Computer allowance	$1,200
One FAES course per semester, tuition and books paid	
Book allowance	$250
Paid health insurance	
Conference travel (one domestic scientific meeting)	upper limit $1,000
Reasonable travel and relocation expenses	
Prearranged, furnished accommodation in the NIH Director's house on campus, with shared baths and kitchen; or in two-bedroom, two-bath apartments adjacent to campus	(rental rates vary)
CRTP Journal Club dinners	
Regular lectures and dinners with Howard Hughes scholars	
Annual visit to research laboratories of Pfizer Inc in Groton, Connecticut	

Clinical Research Training Program *journal club*

Journal Club meets selected Wednesdays from 6:00 pm to 8:00 pm.
Fellows present a current clinical research topic along with supporting journal articles.
Tutors and mentors also participate in this interactive, small-group discussion.

Selected Topics, 2000-2001

- *"MRI based 3D Modeling of Patellofemoral Kinematics"*
- *"Human Atherosclerotic Plaque Characterization Using MRI"*
- *"Phase II Trial of the Antiangiogenic Agent Thalidomide in Patients with Recurrent High-Grade Gliomas"*
- *"Measuring the Rate of Progression and Estimating the Preclinical Period of Parkinson's Disease with [18F]dopa PET"*
- *"Islet Transplantation as a Therapeutic Modality for Type I Diabetes Mellitus"*
- *"Hyper-IgE Syndrome with Recurrent Infections—An Autosomal Dominant Multisystem Disorder"*
- *"Gene-Expression Profiles in Hereditary Breast Cancer"*
- *"The Use of Contrast-enhanced Magnetic Resonance Imaging to Identify Reversible Myocardial Dysfunction"*
- *"Alendronate for the Treatment of Osteoporosis"*
- *"A Potential Role for Interleukin-7 in T-cell Homeostasis"*
- *"Radiofrequency Ablation of Unresectable Primary and Metastatic Hepatic Malignancies"*
- *"Adults with Sickle Cell Disease: Common Complications and Available Treatment Options"*
- *"Early Diagnosis of Cystic Fibrosis Through Neonatal Screening Prevents Severe Malnutrition and Improves Long-Term Growth"*
- *"Elucidating the Pathophysiology of Syringomyelia"*
- *"Indolent Systemic Mast Cell Disease in Adults: Immunophenotypic Characterization of Bone Marrow Mast Cells and Its Diagnostic Implications"*
- *"Immunologic and Therapeutic Evaluation of a Synthetic Peptide Vaccine for the Treatment of Patients with Metastatic Melanoma"*
- *"Simvastatin: A New Therapeutic Approach for Smith-Lemli-Opitz Syndrome"*

Clinical Research Training Program *alumni*

Fellows, 2000-2001	**Medical or Dental School/Residency**
Hany Bedair	4th year, Yale University
Suzette Casal	4th year, Duke University
Nick Costouros*	University of California, San Francisco
Michael Dimyan	4th year, University of California, San Francisco
Jason Gaglia, M.D.	Beth Israel Deaconess Medical Center (Internal Medicine)
Shireen Guide	4th year, Stanford University
Shuba Iyengar	4th year, Duke University
Steve Liao	4th year, Brown University
Dexter Love	4th year, Johns Hopkins University
Melissa McKirdy	4th year, Yale University
Igor Mikityansky	4th year, University of Rochester
Karin Minter	4th year, Duke University
Jordan Prutkin	4th year, Yale University
Charles Sansur	4th year, University of Maryland
Joanne Simpson	Masters Program at Johns Hopkins University School of Public Health before returning to Wake Forest University
Stacy Thurber	4th year, University of California, Los Angeles
Donna Vied	4th year, University of Kentucky, College of Dentistry

Fellows, 1999-2000	**Residency/Other**
Stephenie Boykin, M.D.	Duke University (Pediatrics)
Indranil Debnath, M.D.	Washington University (ENT)
Howard Fine, M.D.	Johns Hopkins University (Ophthalmology)
Courtney Fitzhugh, M.D.	Duke University (Internal Medicine/Pediatrics)
Christopher Graber, M.D.	University of Washington (Internal Medicine)
Hiroyu Hatano, M.D.	Brigham and Women's Hospital (Internal Medicine)
N. Lynn Henry, M.D., Ph.D.	Brigham and Women's Hospital (Internal Medicine)
Jennifer Nicholson, M.D.	University of Rochester–Strong Memorial Hospital (Pediatrics)
Peter Rose, M.D.	Mayo Clinic (Orthopedics)
Mohan Sathyamoorthy, M.D.	Vanderbilt University (Internal Medicine)
William Savage, M.D.	Johns Hopkins University (Pediatrics)
Harjot Singh, M.D.	University of Rochester–Strong Memorial Hospital (Internal Medicine/Pediatrics)
Stefan Weiss, M.D.	Stanford University (Dermatology)
Chen-Sen Wu	Yale University School of Law

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**Participated in second research year at the NIH*

Clinical Research Training Program *alumni*

(continued from other side)

Fellows, 1998-1999	**Residency/Other**
Brandon H. Backlund, M.D.	University of California, San Diego (Emergency Medicine)
Niranjan Bhat, M.D.	University of Washington (Pediatrics)
Mary S. Campbell, M.D.	Stanford University (Internal Medicine)
Sudhen Desai, M.D.*	Stanford University (General Surgery)
Edward Garmey, M.D.	Tulane University (Pediatrics)
Adriana Herrera-Tremoulet, M.D.	Cedars-Sinai Medical Center, Los Angeles (Pediatrics)
Joseph M. Hoxworth, M.D.*	University of California, San Francisco (Radiology)
Jason A. Kessler, M.D.	University of Pennsylvania (Internal Medicine)
Joshua Kouri, M.D.	University of Florida (Neurosurgery)
Edward T. Lahey, D.M.D.	Massachusetts General Hospital (Oral and Maxilofacial Surgery)
Kelly R. Lindauer, M.D.	Duke University (Radiology)
Stacy J. Marcus, M.D.	University of Cincinnati (Pediatrics/Physical Medicine and Rehabilitation)
Michael O'Connor, M.D.	Graduate of the University of Washington
Monita Poudyal, M.D.	Yale University (Internal Medicine)
Cliff Weiss, M.D.*	Johns Hopkins University (Radiology)

Fellows, 1997-1998	**Residency/Other**
Jill A. Anderson, M.D.	Barnes Jewish Hospital–Washington University (Internal Medicine)
Amin Azzam, M.D.	University of California, San Francisco (Psychiatry)
Eric D. Brown, M.D.	King/Drew University (Emergency Medicine)
Clifford Davis, D.D.S.	Private Practice, Louisiana
Arthur Li, M.D.	Johns Hopkins University (Radiology)
Uri Lopatin, M.D.*	New York University (Internal Medicine)
David H. Robbins, M.D.	Mount Sinai Hospital, NY (Gastroenterology fellow)
Jonathan Samuels, M.D.	Case Western Reserve University (Internal Medicine)

**Participated in second research year at the NIH*

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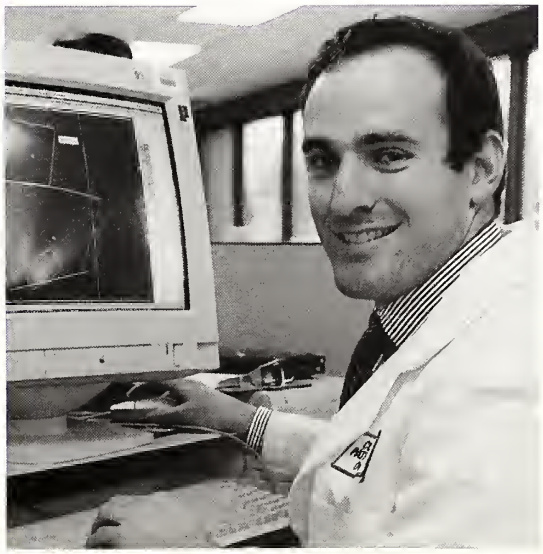
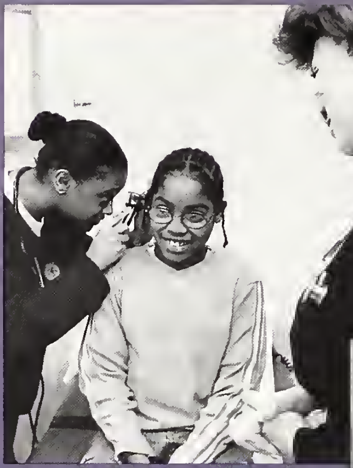


"It was clear in the first few weeks of my year here that clinical research is for me."

– *Will Savage*
Weill Medical College
of Cornell University



www.training.nih.gov/crtp

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The National Institutes of Health is dedicated to building a diverse community in its training and employment programs.